REMARKS

In the Office Action of December 17, 2001, claims 1-18 and 23-27 were rejected by the Examiner. Claims 19-22 were withdrawn from consideration by Applicants in response to the Office Action of May 4, 2001. In view of the above amendments and following remarks, Applicants respectfully request reconsideration of the application.

Rejection Under 35 U.S.C. §112

In paragraphs 5 and 6 of the Office Action, the Examiner rejected independent claim 1 and dependent claims 8 and 15 under 35 U.S.C. §112, stating there was insufficient antecedent basis for the limitation "for each of two points." As shown in the amendments contained herewith, Claims 1-3, 8, and 15 have been amended to more particularly distinguish the claimed limitations between "interior points" located within the graphic primitive and those located on a side of the graphic primitive, recited in the amended claims as "side points."

Rejection Under 35 U.S.C. §102(e)

In the Office Action, the Examiner rejected claims 9-13 and 23-27 as being anticipated by U.S. Patent No. 6,154,223 to Baldwin. Specifically, the Examiner rejected claims 9-13, stating that Baldwin disclosed "a method of rendering a graphic primitive, the primitive including a plurality of edges, the method comprising: deriving a channel

value of a first point on a first edge of the graphic primitive; deriving a channel value of a second point on a second edge of the graphic primitive; and based upon the channel values of the first point and the second point, determining a channel value for an interior point located within an interior surrounded by the edges of the graphic primitive." However, Applicants point out that the derivative disclosed by Baldwin does not anticipate the determination or derivation of channel values as described in the claimed invention.

The Applicants' invention is patentably distinguishable from Baldwin in that deriving channel values of points on a first and second edge of a graphic primitive, and of an interior point within a graphic primitive is fundamentally different from using derivatives and parameters to control, synchronize, and inform a messaging structure for a graphics system. As cited at column 7, lines 27-28, the overall architecture of the invention in Baldwin is "best viewed using the software paradigm of a message passing system." Baldwin goes on to disclose that the "message structure is fundamental to the whole system as the messages are used to control, synchronize, and inform each block about the processing it is about to undertake." The processing GLINT™ chip of Baldwin combines the benefits of a 3D graphics accelerator with state-of-the-art 2D performance, but the preferred embodiment of the invention is primarily centered on its ability to control, synchronize, and inform the processing blocks of the messaging structure of a graphics rendering system.

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The Applicants' invention in claim 9 accomplishes a fundamentally different objective, the derivation of channel values of a first and second edge and the interior of a graphic primitive. While, the invention disclosed by Baldwin discloses using a derivative, start and end parameter messages to control, synchronize, and inform processing blocks for a graphics processing chip (column 7, lines 41-43). Claim 9 of the present invention discloses a method of rendering a graphic primitive by deriving channel values, not controlling, synchronizing, nor informing a processing message structure. The claimed invention is patentably distinguishable from Baldwin, which fails to teach every aspect of the claimed invention, particularly the derivation of channel values from a first and second point on a first and second edge, respectively. Therefore, Applicants submit that independent claims 9 and 13 are in condition for allowance. Furthermore, given that Baldwin fails to teach every aspect of the claimed invention and for those reasons discussed above, dependent claims 10-12 are also allowable.

As to the rejection of independent claims 23 and 27, the Examiner stated that Baldwin disclosed "a method of generating interpolated values for use in rendering a graphic primitive...comprising: receiving an independent variable X...; receiving vertex values X_0, X_1 of a primitive edge having the point...represented by the independent variable X; receiving depth values Z_0, Z_1 associated the vertex values X_0, X_1; and calculating a ratio value...." However, Applicants submit that in order for Baldwin to

anticipate the claimed invention, it must disclose every aspect of the invention taught in the application. Referring to the section cited by the Examiner, there is no disclosure of a method of generating interpolated values for use in rendering a graphic primitive, where one step consists of calculating a ratio value dependent upon the independent variable X, vertex values X_0, X_1, and depth values Z_0, Z_1. In fact, <u>Baldwin</u> merely discloses that depth parameters and derivatives are filtered down to the Depth Unit, never disclosing or referring to a method by which a ratio value is calculated using all of the parameters and derivatives. Given this innovative step, Applicants believe that claims 23 and 27 are patentably distinguishable from <u>Baldwin</u> and therefore allowable. Furthermore, as claims 24-26 depend from claim 23, these claims are also in condition for allowance.

<u>Rejection Under 35 U.S.C. §103(a)</u>

In paragraphs 9-10, the Examiner rejected claims 1-8 and 14-18 under 356 U.S.C. §103(a) as being unpatentable in view of <u>Baldwin</u>. Specifically, in paragraph 10 of the Office Action, the Examiner stated that <u>Baldwin</u> discloses "in a graphics system…graphic primitive having a plurality of sides…method comprising: determining a channel value for each of a plurality of vertices of the primitive." With regard to independent claims 1 and 8, the Examiner also added that <u>Baldwin</u> discloses "selecting an interior point…; determining an interpolated channel value for each of

two points...and determining a channel value at the selected interior point by interpolation from the interpolated channel values of the two points." However, the Applicants submit that Baldwin does not suggest the claimed invention.

Baldwin does not suggest the selection or determination of channel values for interior points, but instead is directed towards the rendering of a triangle. In the present invention, channel values are determined from points located on the sides of the primitive and within the interior, not just the vertices, as disclosed by Baldwin (column 9, lines 34-35). Baldwin specifically refers to rendering a triangle from OpenGL calls based upon vertex information (column 9, line 35). The interpolation of channel values is not suggested by Baldwin, which teaches the OpenGL server/library receives derivatives and initial values for the vertices of the primitive (column 9, lines 34-37), but does not interpolate these values from points located on the sides or the interior of a primitive. Therefore, because Baldwin does not teach the claimed invention, Applicants submit that the reference cited by the Examiner does not suggest the claimed invention and request withdrawal of the rejections of claims 1 and 8.

Dependent claims 2-7 depend either directly or indirectly from independent claim 1 and as such are allowable for at least the same reasons as those stated above, particularly with regard to the distinction of determining interpolated channel values from points located on the sides and interior, in addition to the vertices, of a primitive. Applicants respectfully request withdrawal of the rejections of claims 2-7.

As to independent claim 14, the Examiner stated that Baldwin discloses "a system for rendering a graphic primitive...comprising: a plurality of agents configures to receive information...; a host processor; an arbiter coupled to the plurality of agents...; and interpolation engine...; a geometry engine which performs rapid matrix multiplies and related data manipulations; and a router coupled to the interpolation engine; a router." However, the geometry engine disclosed in Baldwin performs the function of rasterization, which occurs after the transformation or determination of interpolated channel values (column 4, lines 30-35). Therefore, since the geometry engine is fundamentally different from that of the interpolation engine in the claimed invention, Applicants submit that Baldwin does not teach claim 14. For the reasons stated above, Applicants request the withdrawal of the rejection of claim 14.

Additionally, the Examiner rejected claim 15 in that Baldwin disclosed "a system for rendering a graphic primitive... comprising: a channel value input device...; a point specifier...; and interpolation engine.." However, Applicants submit that the fundamental difference between the geometry engine of Baldwin and the interpolation engine of the present invention, as discussed above for independent claim 14 also traverses the Examiner's rejection of claim 15. Therefore, Applicants respectfully request the withdrawal of the rejection of independent claim 15.

Dependent claims 16-18 depend either directly or indirectly from independent claim 15 and as such are allowable for at least the same reasons as those stated above,

particularly that the determining of interpolated channel values from points located on the sides and interior, in addition to the vertices, of a primitive is not obvious in view of Baldwin. Therefore, Applicants respectfully request withdrawal of the rejections of claims 16-18.
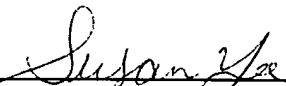
Conclusion

Based on the above amendments and remarks, Applicants submit that the rejections in the Office Action are fully overcome and that the application is in condition for allowance and a Notice of Allowability is respectfully requested. If the Examiner has questions regarding the case, the Examiner is invited to contact Applicants' undersigned representative at the number given below.

Respectfully submitted,

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<u>IN THE CLAIMS</u>

The same-numbered pending claims have been amended as follows:

1. (Twice amended) In a graphics system, a computer-implemented method of

rendering a graphic primitive, the graphic primitive having a plurality of sides that

define the edge of the primitive, the method comprising:

determining a channel value for each of a plurality of vertices of the primitive;

selecting an interior point within the graphic primitive;

<u>selecting at least two side points located on a side of the graphic primitive;</u>

determining an interpolated channel value for each of <u>the at least</u> two <u>side</u>

points[, each point located on a side of the graphic primitive]; and

determining a channel value at the selected interior point by interpolation from

the interpolated channel values of <u>each of</u> the <u>at least</u> two <u>side</u> points.

2. (Twice amended) The method of claim 1, wherein:

[the]determining the interpolated channel value for each of <u>the at least</u> two <u>side</u>

points [step] <u>further</u> comprises performing linear interpolation using an interpolation

engine to determine the interpolated channel values of the two points[; and]<u>.</u>

[the determining a channel value step comprises performing linear interpolation using an interpolation engine to determine the channel value of the selected interior point within the graphic primitive.]

3. (Twice amended) The method of claim 1, wherein:

[the]determining the interpolated channel value for each of the at least two side points [step] further comprises performing perspective interpolation using an interpolation engine to determine the interpolated channel values of the two points[; and the].

[the determining the channel value step comprises performing perspective interpolation using an interpolation engine to determine the channel value of the selected interior point.]

8. (Twice amended) An electronically-readable medium storing a program for permitting a computer to perform a method comprising:

determining a channel value for each of a plurality of vertices of the primitive;

selecting an interior point within the graphic primitive;

determining an interpolated channel value for each of at least two side points[, each point located on a side of the graphic primitive]; and

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determining a channel value at the selected interior point by interpolation from

the interpolated channel values of <u>each of</u> the <u>at least</u> two <u>side</u> points.

15. (Twice amended) A system for rendering a graphic primitive in a graphics system,

the graphic primitive having a plurality of sides, the system comprising:

a channel value input device configured to determine a channel value for each of

a plurality of vertices of the graphic primitive;

a point specifier, coupled to the channel value input device, configured to select

a point within the graphic primitive; and

an interpolation engine coupled to the point specifier and to the channel value

input device, configured to determine an interpolated channel value for each of <u>at least</u>

two <u>side</u> points[, each point located on a side of the graphic primitive], and further

configured to determine a channel value at the selected point by interpolation from the

interpolated values.

The following new claims have been added:

28. (new) The method of claim 1, wherein:

   determining a channel value further comprises performing linear interpolation

using an interpolation engine to determine the channel value of the selected interior

point within the graphic primitive.

29. (new) The method of claim 1, wherein:

   determining the channel value step comprises performing perspective

interpolation using an interpolation engine to determine the channel value of the

selected interior point.